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[12]实用新型专利说明书

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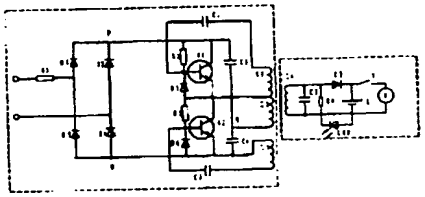
[54]实用新型名称 一种电磁感应充电装置

[57]摘要

一种电磁感应充电装置，包括设置在充电座内的主线圈和设置在充电体内对应位置的感应线圈，所述的感应线圈经整流电路与充电电池的正负极相连，其特征在于所述的主线圈由一直流电源经高频推挽振荡电路驱动；所述的直流电源可由市电经桥式整流电路整流而成；所述的高频推挽振荡电路以三级管 V1、V2 为核心，并与包括有 L1、L2、L3 三个子线圈的主线圈共同构成。与现有技术相比，本实用新型的优点在于，充电座与充电体之间无需通过外露的触点直接接触，也无需准确对位，即可完成充电操作，而且本实用新型采用高频推挽振荡电路，电磁能传输效率高，充电安全且快速可靠。



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说　　明　　书

一种电磁感应充电装置

技术领域

本实用新型涉及一种用于手持充电设备的充电装置，特别是一种充电座与充电体之间无接触触点的电磁感应充电装置。

背景技术

电动剃须刀、电推剪、无绳电话机等手持充电型小家电，当其内的充电电池耗尽时，须搁置在充电座上充电，两者之间通过金属接插件或金属触点而相互电连接，由于金属触点长期暴露在外，不仅会因接触空气而氧化，造成接触不良，而且万一被水浸湿还会引起更严重的故障。

发明内容

本实用新型所要解决的技术问题是如何提供一种充电座与充电体之间无需触点接触即可使充电体内的电池充电的电磁感应充电装置。

本实用新型解决上述技术问题所采用的技术方案为：电磁感应充电装置包括设置在充电座内的主线圈和设置在充电体内对应位置的感应线圈，所述的感应线圈经整流电路与充电电池的正负极相连，其特征在于所述的主线圈由一直流电源经高频推挽振荡电路驱动。

所述的直流电源可由市电经桥式整流电路整流而成；

所述的高频推挽振荡电路以三级管V1、V2为核心，V1的集电极接直流电源的正极，V1的集电极与基极之间接有偏置电阻R2，V1的发射极经保护二极管D5接其基极，V2的发射极接直流电源的负极，V2的集电极与V1的发射极相接，V2的集电极与基极之间接有偏置电阻R3，V2的发射极经保护二极管D6接其基极；而所述的主线圈则包括有L1、L2、L3三个子线圈，其中L1、L2共用一个中间公共端，该公共端接V1发射极与V2集电极的共接端，L1的另一端经电容C1后接V1的基极，L2的另一端一路经电容C3接V1的集电极，另一路经电容C4接V2的发射极，L3的一端接V2的发射极，另一端经电容C2接V2的基极。

与现有技术相比，本实用新型的优点在于，充电座与充电体之间无需通过外露的触点直接接触，也无需准确对位，即可完成充电操作，而且本实用新型采用高频推挽振荡电路，电磁能传输效率高，充电安全且快速可靠。

说　明　书　附　图

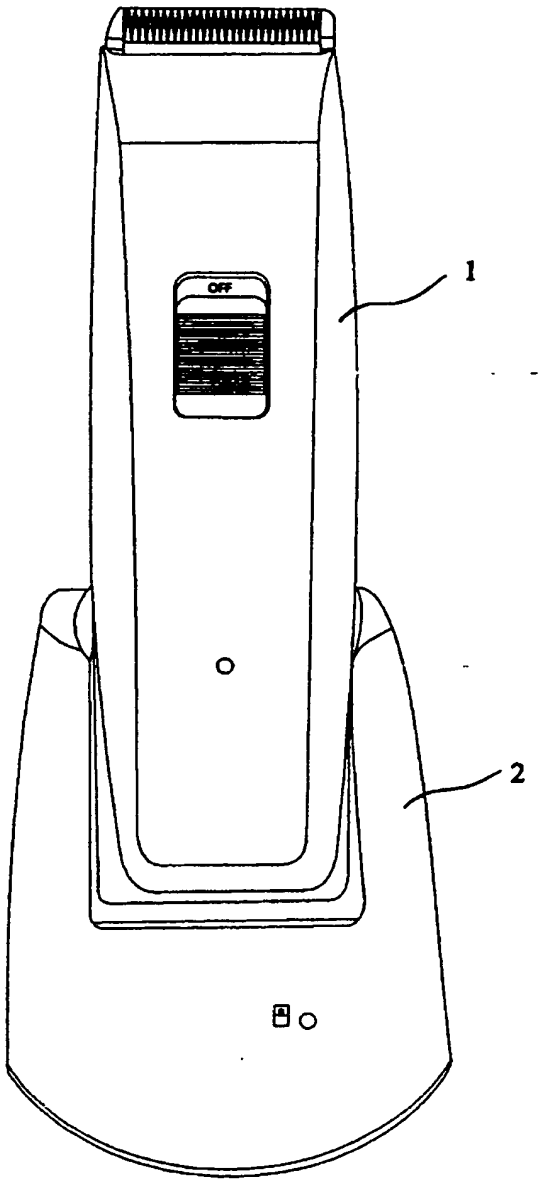

图1

the Chinese Patent Law.

Claim 21 defines a feature "so that the robot contacts the charger within a charging position even if a position of the robot is not precisely controlled", which generalizes a too broad protection scope.

In addition to the description "leaving a margin in the protrusion accommodating part, and providing guiding slants in the protrusion and the protrusion accommodating part" in the present Specification (as seen from Lines 20-24, Page 9, Lines14-23, Page 10, and Line 24, Page 10-Line 2, Page 11 of the present English Specification), it is difficult for those skilled in the art to conceive other modes for allowing the robot to contact the charger within a charging position even if a position of the robot is not precisely controlled. Therefore, Claim 21 is not supported by the description of the Specification, which is not complied with the provision of Article 26(4) of the Chinese Patent Law.

Furthermore, there are similar defects in Claims 13 and 25, which is not complied with the provision of Article 26(4) of the Chinese Patent Law.

The Article 26(4) of the Chinese Patent Law: The claims shall be supported by the description and shall state the extent of the patent protection asked for.

4. Claim 27 is not complied with the provision of Article 22(3) of the Chinese Patent Law.

Claim 27 makes a further definition to Claim 1. However, Reference 1 discloses that the battery in the charging body can be charged without electrical contact between the charging body and the charging cradle (as seen from Lines 10-11, Page 1 of the Specification in Reference 1).

Since Claim 1 cited by Claim 27 has no inventiveness, Claim 27 has no prominent substantive features and a notable progress, and lacks inventiveness, which is not complied with the provision of Article 22(3) of the Chinese Patent Law.

5. Claim 29 is not complied with the provision of Article 22(3) of the Chinese Patent Law.

Claim 29 claims a charging system to charge a battery of a robot.

However, Reference 1 (CN2506010Y) discloses a charging apparatus for a handheld chargeable device. More specifically, Reference 1 discloses the following technical features (as seen from Lines 4-33, Page 2 of the Specification and Figures 1 and 2 in Reference 1). The charging apparatus comprises a charging cradle (corresponding to "the charger" as defined in Claim 29 of the present application); a part provided in the charging cradle (corresponding to "the first charging unit" as defined in Claim 29 of the present application) for generating an electromagnetic field,

which includes a contact for emitting the electromagnetic field and making contact with an electric hair cutter (corresponding to "the first terminal part" as defined in Claim 29 of the present application); and a part provided in the charging body, which includes a contact of the electric hair cutter for engaging and making contact with the contact of the charging cradle (corresponding to "the second terminal part" as defined in Claim 29 of the present application), so as to generated an induced current from the electromagnetic field emitted from the charging cradle and providing a power to the battery.

As seen, the distinctive feature between the solution defined in Claim 29 of the present application and that of Reference 1 only consists in "the charging system is used for a robot" as defined in Claim 29. As for those skilled in the art, since the robot and the handheld charging device can be charged by a rechargeable cell within them, and the charging on the charging cell in both the present application and Reference 1 is performed by way of a non-contact mode, it is obvious for applying the charging apparatus in the handheld charging device as disclosed in Reference 1 to a charging system for a robot.

Therefore, it is obvious to obtain the solution as defined in Claim 29 by combining the above common sense on basis of the disclosure of Reference 1. Thus, Claim 29 has no prominent substantive features and a notable progress, and lacks inventiveness, which is not complied with the provision of Article 22(3) of the Chinese Patent Law.

6. Claim 33 is not complied with the provision of Article 22(3) of the Chinese Patent Law.

Claim 33 claims a charging system to charge a battery of a robot.

However, Reference 1 (CN2506010Y) discloses a charging apparatus for a handheld chargeable device. More specifically, Reference 1 discloses the following technical features (as seen from Lines 4-33, Page 2 of the Specification and Figures 1 and 2 in Reference 1). The charging apparatus comprises a charging cradle (corresponding to "the charger" as defined in Claim 33 of the present application); a part provided in the charging cradle (corresponding to "the first charging unit" as defined in Claim 33 of the present application) for generating an electromagnetic field, which includes a contact for emitting the electromagnetic field and making contact with an electric hair cutter (corresponding to "the first terminal part" as defined in Claim 33 of the present application); and a part provided in the charging body, which includes a contact of the electric hair cutter for engaging and making contact with the contact of the charging cradle (corresponding to "the second terminal part" as defined in Claim 33 of the present application), so as to generated an induced current from the

electromagnetic field emitted from the charging cradle and providing a power to the battery. The battery of the robot is charged without electrical contact between the robot and the charger.

As seen, the distinctive feature between the solution defined in Claim 33 of the present application and that of Reference 1 only consists in "the charging system is used for a robot" as defined in Claim 33. As for those skilled in the art, since the robot and the handheld charging device can be charged by a rechargeable cell within them, and the charging on the charging cell in both the present application and Reference 1 is performed by way of a non-contact mode, it is obvious for applying the charging apparatus in the handheld charging device as disclosed in Reference 1 to a charging system for a robot.

Therefore, it is obvious to obtain the solution as defined in Claim 33 by combining the above common sense on basis of the disclosure of Reference 1. Thus, Claim 33 has no prominent substantive features and a notable progress, and lacks inventiveness, which is not complied with the provision of Article 22(3) of the Chinese Patent Law.

7. The applicant should make adaptive amendments to Summary of the Invention Portion of the Specification, in correspondence with on-going amendments to Claims.

In summary, due to the reasons mentioned above, this application could not be granted a patent at present. The applicant should amend the claims following the requirements as described above. It should be noted that the amendment to the application could not go beyond the scope of the disclosure contained in the initial description and claims. In the meanwhile, if the applicant makes an amendment to Claims, he or she must give a support from the Specification. Otherwise, the application would be rejected according to Article 38 of the Chinese Patent Law.